

INVESTIGATOR'S ANNUAL REPORT

National Park Service

All or some of the information provided may be available to the public

Reporting Year: 1993	Park: Shenandoah NP
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Name: Mr Rick Webb Phone: n/a Email: n/a	
Permit#: SHEN1993AGQA	
Park-assigned Study Id. #: unknown	
Project Title: Mechanisms Controlling Variation in Stream Chemical Composition during Hydrologic Episodes in the Shenandoah National Park, Virginia	
Permit Start Date: Jan 01, 1998	Permit Expiration Date Jan 01, 1998
Study Start Date: Jan 01, 1992	Study End Date Jan 01, 1993
Study Status: Completed	
Activity Type: Other	
Subject/Discipline: Water / Hydrology	
Objectives: To document episodic acidification occurring in SNP with variations due to differing geologic bedrock.	
Findings and Status: Acid deposition is widely believed to have contributed to the episodic acidification of some freshwater systems primarily in the northeastern United States, Canada and Europe. This study investigated how acidification changed the stream chemical composition during storm events and which mechanisms predominated in the Shenandoah National Park. Two parts were included: a historical analysis of the data from the Shenandoah Watershed Study of four catchments, White Oak Run, Shaver Hollow, Deep Run, and Madison Run; and a field experiment in 1992 at White Oak Run and Shaver Hollow. The historical data was weekly samples from 1988-1991 of the four streams and the field data were samples of the streams during actual storms. Both parts then analyzed the data with the Response Sector Model, Ion-ANC Ratio Analysis and Principle Components Analysis. Both parts of the study found that acid anion flushing was the predominant acidification mechanism during episodic acidification. Under typical conditions, base cation dilution plays a large role also, but to what degree depends largely on the underlying bedrock. During 1992, Gypsy moth defoliation in parts of the Shenandoah National Park altered the mechanisms at White Oak Run and Shaver Hollow. Base cations increased during storms and nitrate became a bigger contributor to the acid anion flushing effect.	
For this study, were one or more specimens collected and removed from the park but not destroyed during analyses? No	
Funding provided this reporting year by NPS: 0	Funding provided this reporting year by other sources: 0
Fill out the following ONLY IF the National Park Service supported this project in this reporting year by providing money to a university or college	
Full name of college or university:	Annual funding provided by NPS to university or college this reporting

n/a	year: 0
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